

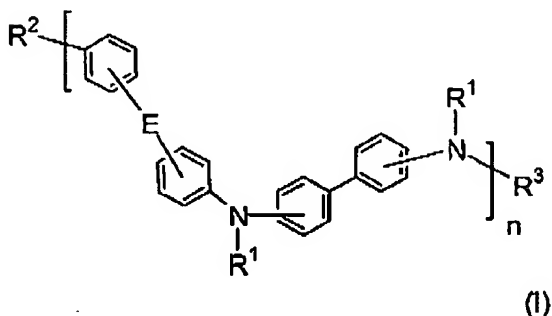
**Docket No.: UC0409 US NA**  
**Application No.: 10/782,357**  
**Office Action Dated: May 19, 2006**

## PATENT

**This listing of claims will replace all prior versions, and listings, of claims in the application.**

### Listing of Claims:

**1 (currently amended).** A compound having the formula:



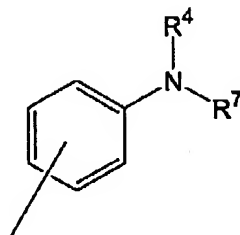
wherein:

**n is an integer of at least 1;**

**R<sup>1</sup> is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms:**

$R^3$  is selected from H and  $R^1$ ;

$R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



wherein R<sup>4</sup> is selected from aryl, H, R<sup>1</sup>, alkyl, and fluoroalkyl;

R<sup>7</sup> is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

—  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy.  $R^5$  and  $R^6$  can, when taken together, form a ring;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and

Docket No.: UC0409 US NA  
 Application No.: 10/782,357  
 Office Action Dated: May 19, 2006

PATENT

~~fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and~~

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

2 (original). The compound of claim 1, and wherein  $R^5$  and  $R^6$ , when taken together, form a non-aromatic ring.

3 (original). The compound of claim 1 wherein n is greater than 1.

4 (original). The compound of claim 2 wherein  $R^1$  is different at each occurrence.

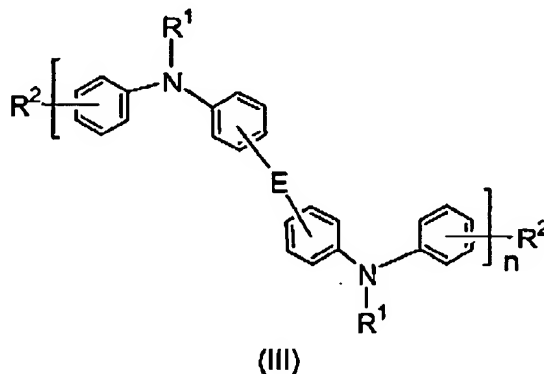
5 (original). The compound of claim 1 wherein  $R^2$  is H.

6 (original). The composition of claim 5 wherein  $R^3$  is aryl.

7 (original). The compound of claim 1 wherein  $R^1$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

8 (original). The compound of claim 1 wherein n = 1,  $R^2$  is H, and  $R^3$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

9 (currently amended). A compound of formula (III):

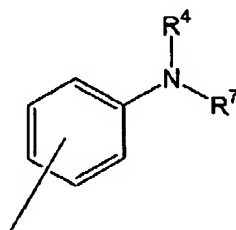


Docket No.: UC0409 US NA  
 Application No.: 10/782,357  
 Office Action Dated: May 19, 2006

PATENT

wherein

n is an integer of at least 1,  $R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl; ~~preferably,  $R^1$  is aryl and may be different at each occurrence (i.e. copolymers).~~  $R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(II)

$R^4$  is selected from aryl, H,  $R^1$ , alkyl, fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and ~~n is greater than 4~~ and m is 1, then n is greater than 1 and at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

10 (original). The compound of claim 9 wherein  $R^1$  is different at each occurrence.

11 (original). The compound of claim 9, wherein  $R^5$  and  $R^6$ , when taken together, form a non-aromatic ring.

12 (original). The compound of claim 9 wherein  $R^2$  is H or aryl.

13 (currently amended). The compound of claim 9 wherein  $R^2$   ~~$R^3$~~  is aryl.

14 (original). The compound of claim 9 wherein  $R^4$  is aryl.

15 (original). The compound of claim 9 wherein  $R^1$  is selected from phenyl, 1-naphthyl, and 2-naphthyl.

**Docket No.: UC0409 US NA**  
**Application No.: 10/782,357**  
**Office Action Dated: May 19, 2006**

## PATENT

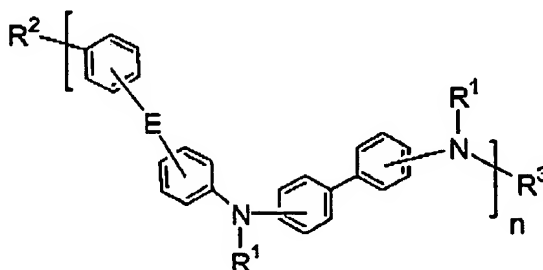
16 (original). The compound of claim 9 wherein n = 1, R<sup>2</sup> is H, and R<sup>3</sup> is selected from phenyl, 1-naphthyl, and 2-naphthyl.

17 (original). The compound of claim 9 wherein at least one aromatic ring in the compound of formula (III) has a substituent selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy.

18 (original). The compound of claim 9 wherein substituents on two neighboring aromatic rings in the compound of formula (III) together form an aromatic or non-aromatic ring.

**19 (original).** The compound of claim 9 wherein adjacent substituents on at least one aromatic ring together form a fused aromatic or non-aromatic ring.

20 (currently amended). A composition comprising a compound of at least one compound selected from:



(1)

wherein:

**n** is an integer of at least 1;

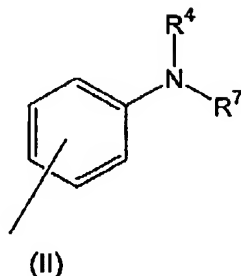
R<sup>1</sup> is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

$R^3$  is selected from H and  $R^1$ ;

$R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),

Docket No.: UC0409 US NA  
 Application No.: 10/782,357  
 Office Action Dated: May 19, 2006

PATENT

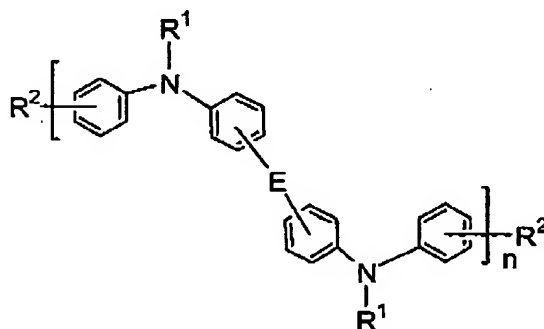


wherein  $R^4$  is selected from aryl, H,  $R^1$ , alkyl, and fluoroalkyl;  
 $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

~~$R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy.  $R^5$  and  $R^6$  can, when taken together, form a ring;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and~~

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a ~~non-aromatic~~ ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

and

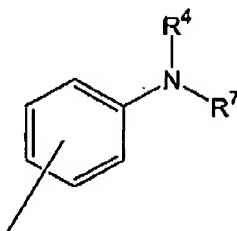


Docket No.: UC0409 US NA  
 Application No.: 10/782,357  
 Office Action Dated: May 19, 2006

PATENT

wherein

n is an integer of at least 1,  $R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl; ~~preferably,  $R^1$  is aryl and may be different at each occurrence (i.e. copolymers).~~  $R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



(II)

$R^4$  is selected from aryl, H,  $R^1$ , alkyl, fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein  $R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

21 (original). An electronic device comprising at least one layer comprising at least one compound selected from the compounds of Claim 1 or Claim 9.

22 (original). The device of Claim 21, wherein the layer is a charge transport layer.

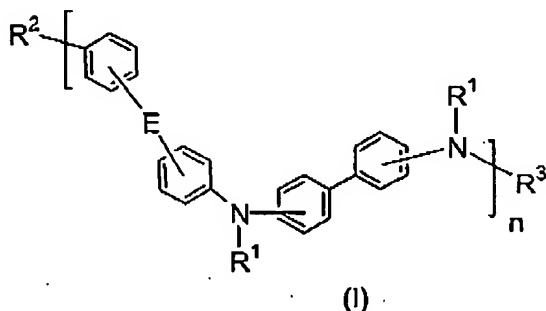
23 (original). The device of Claim 21, wherein the layer is a light-emitting layer.

Docket No.: UC0409 US NA  
 Application No.: 10/782,357  
 Office Action Dated: May 19, 2006

PATENT

24 (currently amended). A process for producing a polymer, comprising:

(a) providing two or more compounds having the formulae (I) or (III):



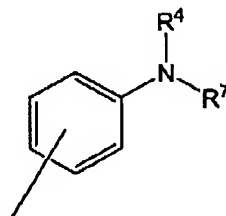
wherein:

$n$  is an integer of at least 1;

$R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms;

$R^3$  is selected from H and  $R^1$ ;

$R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and an arylamino group of formula (II),



wherein  $R^4$  is selected from aryl, H,  $R^1$ , alkyl, and fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

$R^5$  and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy.  $R^6$  and  $R^6$  can, when taken together, form a ring;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

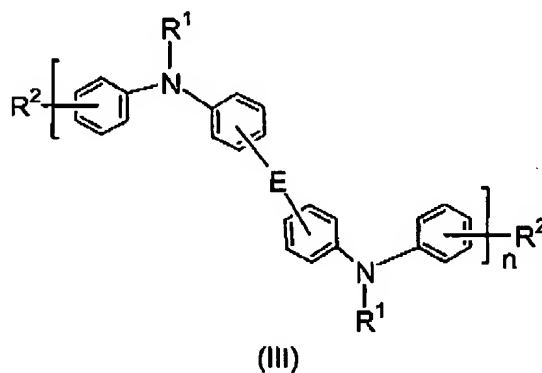
$E$  is selected from O, S,  $(SiR^5R^6)_m$  wherein  $m$  is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein  $m$  is an integer of 1 to 20, and combinations thereof, wherein  $R^5$

Docket No.: UC0409 US NA  
 Application No.: 10/782,357  
 Office Action Dated: May 19, 2006

PATENT

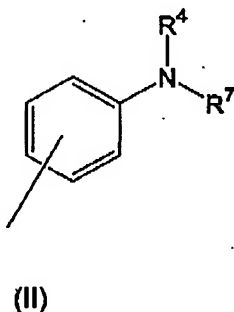
and  $R^6$  are each independently selected from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon

or



wherein

n is an integer of at least 1,  $R^1$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl; preferably,  $R^1$  is aryl and may be different at each occurrence; (i.e. copolymers).  $R^2$  is selected from H,  $R^1$ , alkyl, fluoroalkyl, Cl, Br, I and arylamino of formula (II)



$R^4$  is selected from aryl, H,  $R^1$ , alkyl, fluoroalkyl;  $R^7$  is selected from aryl, heteroaryl, fluoroaryl, and fluoroheteroaryl substituted with 1 or more fluorine atoms, preferably up to 7 fluorine atoms; and

E is selected from O, S,  $(SiR^5R^6)_m$  wherein m is an integer of 1 to 20,  $(CR^5R^6)_m$  wherein m is an integer of 1 to 20, and combinations thereof, and can be different at each occurrence, wherein  $R^5$  and  $R^6$  are each independently selected



Docket No.: UC0409 US NA  
Application No.: 10/782,357  
Office Action Dated: May 19, 2006

PATENT

from H, F, alkyl, aryl, alkoxy, aryloxy, fluoroalkyl, fluoroaryl, fluoroalkoxy, and fluoroaryloxy and wherein  $R^5$  and  $R^6$  can, when taken together, form a non-aromatic ring, provided that when E is  $(CR^5R^6)_m$ , and n is greater than 1 and m is 1, at least one of  $R^5$  and  $R^6$  is not hydrogen or a hydrocarbon.

(b) reacting said compounds in the presence of a copper, nickel, or palladium catalyst while maintaining said compounds at a temperature of 22°C to 150°C for 24 to 92 hours, to form a first polymer;

(c) treating said polymer with an endcapping group to form a capped polymer; and

(d) further reacting said capped polymer for 24 to 48 hours to produce said polymer.

25 (original). The device of Claim 21, wherein the device is selected from a light-emitting diode, a light-emitting diode display, a laser diode, a photodetector, photoconductive cell, photoresistor, photoswitch, phototransistor, phototube, IR-detector, photovoltaic device, solar cell, transistor or diode.